



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: August 9, 1991

SUBJECT: BTAG Review of Ecological Assessment for American
Chemical Services Superfund Site, Griffith, Indiana

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TO: Wade Hartwick, RPM
IL/IN #2

The Biological Technical Assistance Group (BTAG) reviewed and discussed the above mentioned report during a meeting held August 1, 1991. Below are comments which resulted from the meeting.

Since the Ecological Assessment depends on the assumptions used, our comments will start with § 7.2.8, Ecological Assessment Assumptions. These comments also apply to the sections where the assumptions are first stated or explained in more detail. In future drafts, it would be helpful if all assumptions are clearly stated earlier in the report.

Section 7.2.8 - Ecological Assessment Assumptions

Media of potential concern, page 70

1) The chemical concentrations for media of concern must represent the worst case scenario. The highest concentrations, rather than the upper bound 95% confidence interval, must be used.

2) Actual bioconcentration factors (BCFs) available in the literature should be used when possible, rather than K_{oc} values. BCFs for aquatic species uptake from surface water are available in the U.S. EPA's AQUIRE database, accessible through many commercial literature database systems.

Selection of chemicals of potential concern, page 71

3) Risk calculations must be performed for more than just one organic and one inorganic contaminant in each media. Species-specific reference doses cannot be used to determine the relative importance of contaminants in all media. Risk assessment calculations should be conducted for the following contaminants:

-all contaminants in surface water or shallow groundwater that exceed acute or chronic Ambient Water Quality Criteria or Lowest Reported Toxic Concentration values. A brief comparison indicated that iron, lead, zinc, cadmium, PCBs, benzene, and phthalate esters exceed at least one of these values. A more thorough comparison may likely yield additional contaminants.

-additional surface water or upper aquifer contaminants without developed AWQC that, based on our professional judgement, may be impacting biota. These contaminants include 2-butanone (which was already included in the assessment).

-contaminants in soils and sediments that, based on our professional judgement, may individually or collectively be impacting biota. These contaminants include arsenic, cadmium, chromium, copper, lead, mercury, zinc, PCBs, BETX, phthalate esters, and PAHs.

4) Multiplication of ground water contaminant concentrations by the inverse of the contaminant K_{oc} is not a good assumption. Contaminant concentrations measured in shallow ground water wells represent the levels expected in surface waters because adsorption to the soil substrates will have already occurred. Furthermore, adsorption of some contaminants, such as PCBs, is actually controlled by kinetics rather than equilibrium processes.

5) General soil-water partition coefficients for inorganic contaminants do not exist. They could only exist on a substrate- and site-specific basis, and would not be organic carbon partition coefficients. BCFs and BAFs are available from the literature for many of the metal contaminants of concern at this site.

Chemicals of potential concern - toxicity, page 71

6) As discussed above, it is inappropriate to select only one organic and one inorganic contaminant for each medium as a contaminant of concern.

Terrestrial Risk Estimates, page 71

7) No basis is provided for the assumption that exposure from food consumption is negligible. Estimates of contaminant exposure from food ingestion must be included in risk calculations.

Organic chemicals of potential concern, page 72

8) PCBs should not be listed separately from other chemicals of concern, as is done here.

9) Third bullet - A reference should be provided for the assumption that minks eat 90% small game and 10% amphibians. Risk calculations using EPA and Fish and Wildlife Service recommended assumptions should be included in the main body of the text, not as a footnote.

10) 5th bullet - Mammal ingestion of site contaminants would tend to integrate contaminant distribution, and frequency of detection of PCBs in animal tissue would be less variable than that for soils on-site. Therefore, it should be assumed that all food items contain PCBs.

Aquatic Toxicity Estimates, page 73

11) Sediment reference doses for bluegill uptake must be based on dietary toxicity uptake levels from the literature, not on back-calculations using BCFs and AWQC.

12) Ambient Water Quality Criteria should be used as a benchmark to determine whether risk to aquatic life is posed by contaminants. If no AWQC are available for a contaminant, then LOEL or conservative toxicity values from the literature must be used. For organic contaminants with little information available from the literature, BCFs can be calculated from K_{ow} or K_{oc} .

13) Since the RI report said the main contributor to wetland surface water was shallow ground water discharge, ground water levels should not be divided by a dilution factor. A biodegradation factor is also inappropriate, particularly for persistent contaminants such as PCBs.

14) Uptake of contaminants via prey ingestion must also be included in the analysis for the bluegill. BCFs for macroinvertebrates, a main food source for bluegills, are available from the literature.

Additional comments on the Report:

§ 7.2.3.1, Hydrological Summary, page 54

15) The RI Report concludes that groundwater is a major contributor to the Site watershed.

§ 7.2.3.2, Aquatic Areas, page 55

16) Based on field visits by BTAG members, the drainage ditches are not ephemeral.

§ 7.2.4 Contaminants of Concern, page 58

17) The number of actual sampling points in each media from which the list of contaminants of concern is derived must be specified. For instance, the number of soil borings where analyses were conducted in soil < 4 feet deep must be specified.

§ 7.2.5.2 Populations of Concern, page 63

18) The final sentence in the first paragraph, "Because the other contaminants...", should be removed.

19) The reference for using BAFs of 0.5 for organics uptake and 0.1 for inorganics uptake by bluegills from ingestion should be provided.

§ 7.2.6 Toxicity Assessment, page 64

20) Although the Apparent Effects Threshold approach is certainly a valid approach to assess sediment toxicity, specific values derived for the Puget Sound in Washington state cannot be used as benchmark or criteria values for this freshwater wetland and creek

in Indiana. Such a comparison is meaningless. The Apparent Effects Threshold is an approach or method of evaluating sediment toxicity, not a development of nationwide sediment criteria based on Puget Sound data.

§ 7.2.7 Risk Characterization, page 66

21) As paragraph 1 on page 65 correctly states, "A hazard quotient value of greater than one indicates that the species of concern has an intake of a particular contaminant of concern at a dose rate that may be sufficient to affect the population stability of that species". Yet in paragraph 2, this assessment dismisses the possibility that PCBs are affecting mink populations because the HQ is "slightly greater than 1". The interpretation of the HQ value for mink consumption of PCBs (using non-EPA and USFWS assumptions) obviously is not correct.

§ 7.2.7.1 Water Quality Criteria, page 67

22) Exceedances of AWQC, not ten times AWQC, indicate water quality problems. Also, AWQC are developed for single chemicals, and exceedances by more than one chemical in a mixture, such as at this site, indicates the likelihood for serious effects. The statement that "excursions [sic] of these criteria by a factor of less than 10 may stress populations of some sensitive species" is a gross understatement.

§ 7.2.7.2 Sediment Quality Criteria, page 67

23) Sediment Quality Criteria are appropriate only for nonpolar hydrophobic organic contaminants in sediments that are continually inundated with water. While ditch sediments are continually inundated, wetland sediments/soils may not be, and these criteria could not be used. Also, SQC were calculated for many chemicals which are not nonpolar hydrophics, such as phenol, methylene chloride, and many others.

§ 7.2.7.3 Endangered Species and Significant Areas, page 69

24) The second sentence, "The historical use of the area...", is incorrect, as evidenced by the last sentence in this paragraph, and should be removed. Warzyn should state exactly what census techniques were used in their observations of May, 1990 and the expertise of the personnel conducting those observations. Also, the king rail is a state, not federal, threatened species.

§ 7.2.9 Summary, page 75

25) This summary should be rewritten following acceptable changes in the risk assessment.

If you have any questions, please contact me at 6-5902.

cc: BTAG members